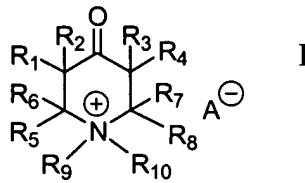


IN THE CLAIMS:

1. (Currently Amended) A method of producing mostly $5\beta,6\beta$ -epoxides of steroids from Δ^5 -unsaturated steroids by an epoxidation reaction using a ketone and an oxidizing agent under conditions effective to generate epoxides,.

wherein said ketone is selected from compounds of generic formula I,



R₁ or R₄ in formula (I) is selected from alkyl, halogenated alkyl, aryl, OR_yOR_v (where R_yR_v = H, alkyl or aryl), $\text{OCOR}_y\text{OCOR}_v$ (where R_yR_v = H, alkyl or aryl), $\text{OCOOR}_y\text{OCOOR}_v$ (where R_yR_v = alkyl or aryl), $\text{OCOOCH}_2\text{RR}_z$ (where R_zR_z = aryl), $\text{OCONR}_1\text{R}_2\text{OCONR}_u\text{R}_v$ (where R_1R_u or R_2R_v = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where R_1R_w , R_2R_x or R_3R_y = alkyl or aryl), and halogen;

R₂ or R₃ in formula (I) is selected from H, alkyl, halogenated alkyl, aryl, OR_yOR_v (where R_yR_v = H, alkyl or aryl), $\text{OCOR}_y\text{OCOR}_v$ (where R_yR_v = H, alkyl or aryl), $\text{OCOOR}_y\text{OCOOR}_v$ (where R_yR_v = alkyl or aryl), $\text{OCOOCH}_2\text{RR}_z$ (where R_zR_z = aryl), $\text{OCONR}_1\text{R}_2\text{OCONR}_u\text{R}_v$ (where R_1R_u or R_2R_v = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where R_1R_w , R_2R_x or R_3R_y = alkyl or aryl), and halogen;

R₅, R₆, R₇ or R₈ in formula (I) is selected from H, alkyl, halogenated alkyl, aryl, $\text{COOR}_y\text{COOR}_v$ (where R_yR_v = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_u\text{R}_v$ (where R_1R_u or R_2R_v = H, alkyl or aryl);

R₉ or R₁₀ in formula (I) is selected from alkyl, halogenated alkyl, and aryl; and

A in formula (I) is selected from halogen, OTf, BF₄, OAc, NO₃, BPh₄, PF₆, and SbF₆.

2. (Original) The method of claim 1 wherein said oxidizing reagent is selected from the group consisting of potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids.

PL
CH 3. (Original) The method of claim 2 wherein said epoxidation reaction is carried out using potassium peroxomonosulfate as an oxidizing agent.

4. (Currently Amended) The method of claim 1 wherein said epoxidation reaction is carried out in a homogeneous solvent system containingselected from dimethoxymethane-acetonitrile-water, acetonitrile-water, acetone-water, dioxane-water, dimethoxyethane-water, and tetrahydrofuran-water, or a biphasic solvent system containingselected from dichloromethane-water, chloroform-water, benzene-water, toluene-water, dimethoxymethane-water, or diethylether-water, or mixtures thereof.

5. (Original) The method of claim 1 wherein said epoxidation reaction is carried out at a temperature within the range from about -10 °C to about 40 °C.

6. (Original) The method of claim 5 wherein said epoxidation reaction is carried out at room temperature.

7. (Original) The method of claim 1 wherein said epoxidation reaction is carried out at a pH within the range from about 7.0 to about 12.0.

8. (Original) The method of claim 7 wherein said pH is within the range from about 7.0 to about 7.5.

9. (Original) The method of claim 7 wherein said pH is controlled by using a pH-stat or a buffer.

10. (Currently Amended) The method of claim 9 wherein said buffer is selected from the solutions^{group} consisting of solutions of sodium bicarbonate, sodium carbonate, sodium borate, sodium hydrogenphosphate, sodium dihydrogenphosphate, sodium hydroxide, potassium hydrogenphosphate, potassium dihydrogenphosphate, potassium bicarbonate, potassium carbonate, potassium hydroxide, ~~or~~^{and} mixtures thereof.

11. (Original) The method of claim 1 wherein said epoxidation reaction provides said epoxides in at least about 5:1 β/α -epoxide ratio.

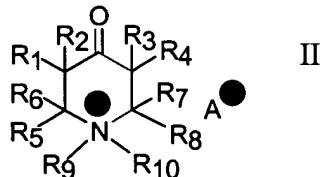
12. (Original) A method of producing mostly $5\beta,6\beta$ -epoxides of steroids from Δ^5 -unsaturated steroids having a substituent at the 3α -position by an epoxidation reaction using a ketone and an oxidizing agent under conditions effective to generate epoxides.

13. (Currently Amended) The method of claim 12 wherein said substituent is selected from OR_y (where R_y = H, alkyl or aryl), $O(CH_2)_nOR_y$ (where n = 1, 2 or 3, R_y = H, alkyl or aryl), $O(CH_2)_mSO_nR_y$ (where n m = 1, 2 or 3; n = 0, 1 or 2; R_y = H, alkyl or aryl), $OSiR_1R_2R_3$ ~~OSiR_wR_xR_y~~ (where R_1 , R_2 or R_3 , R_w , R_x or R_y = alkyl or aryl), OSO_nR_y (where n = 0, 1 or 2; R_y = H, alkyl or aryl), OCO_nR_y (where n = 1 or 2; R_y = H, alkyl or aryl), $OCONR_1R_2$ ~~OCONR_uR_v~~ (where R_1 or R_2 , R_u or R_v = H, alkyl or aryl), OPO_nR_y (where ~~where~~ n = 2 or 3; R_y = alkyl or aryl), NR_1R_2 ~~NR_uR_v~~ (where R_1 , R_u or R_2 , R_v = H,

alkyl or aryl), NR₄CO_nR₂ NR₅CO_nR₆ (where n = 1 or 2; R₄ or R₂ R₅ or R₆ = H, alkyl or aryl), NR₄CONR₂R₃ NR₅CONR₆R₇ (where R₄, R₂ or R₃ R₅, R₆ or R₇ = H, alkyl or aryl), NR₄SO_nR₂ NR₅SO_nR₆ (where n = 1 or 2; R₄ R₅ = H, alkyl or aryl, R₂ R₆ = alkyl or aryl), NPhth (Phth = phthaloyl group), ⁺NR₄R₂R₃ ⁺NR₅R₆R₇ (where R₄, R₂, or R₃ R₅, R₆, or R₇ = H, alkyl or aryl), SiR₁R₂R₃ SiR₄R₅R₆ (where R₁, R₂, or R₃ R₄, R₅, or R₆ = H, alkyl or aryl), SO_nR₇ (where n = 0, 1 or 2; R₇ = H, alkyl or aryl), SCO_nR₇ (where n = 1 or 2; R₇ = H, alkyl or aryl), halogen, CN, NO₂, alkyl, aryl, COOR₇ (where R₇ = H, alkyl or aryl), and CONR₄R₂ CONR₅R₆ (where R₄ or R₂ R₅ or R₆ = H, alkyl or aryl).

14. (Original) The method of claim 12 wherein said Δ^5 -unsaturated steroid having a substituent at the 3 α -position is selected from the group consisting of Δ^5 -unsaturated steroids having a ketal derivative of ketone group or a thioketal derivative of ketone group at the 3-position.

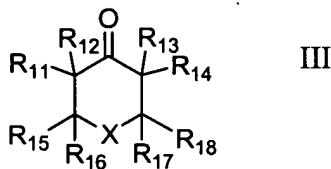
15. (Currently Amended) The method of claim 12 wherein said ketone is selected from the group consisting of compounds of generic formula II, III, IV, and V wherein



R₁, R₂, R₃, or R₄ in formula (II) is selected from H, alkyl, halogenated alkyl, aryl, OROR₇ (where R R₇ = H, alkyl or aryl), OCOROCOR₇ (where R R₇ = H, alkyl or aryl), OCOOROCOOR₇ (where R R₇ = alkyl or aryl), OCONR₄R₂-OCONR₅R₆ (where R₄R₆ or R₂R₇ = H, alkyl or aryl), OSiR₁R₂R₃ OSiR₄R₅R₆ (where R₁, R₂, R₃ or R₄, R₅, R₆ = alkyl or aryl), and halogen;

R_5 , R_6 , R_7 , R_8 , R_9 or R_{10} in formula (II) is selected from H, alkyl, halogenated alkyl, aryl, COORCOOR_v (where $\underline{R}\underline{R}_v$ = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_u\text{R}_v$ (where $\underline{R}_1\underline{R}_u$ or $\underline{R}_2\underline{R}_v$ = H, alkyl or aryl);

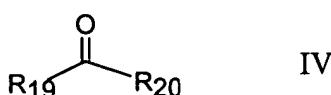
A in formula (II) is selected from halogen, OTf , BF_4 , OAc , NO_3 , BPh_4 , PF_6 , and SbF_6 ;



X in formula (III) is selected from $(\text{CR}_1\text{R}_2\text{CR}_u\text{R}_v)_n$ (where $n = 1, 2, 3, 4$, or 5 ; $\underline{R}_1\underline{R}_u$ or $\underline{R}_2\underline{R}_v$ = H, alkyl or aryl), O, S, SO_2 , and NRNR_v (where $\underline{R}\underline{R}_v$ = H, alkyl or aryl);

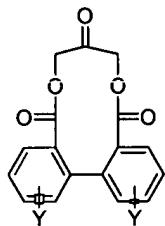
R_{11} , R_{12} , R_{13} , or R_{14} in formula (III) is selected from H, alkyl, halogenated alkyl, aryl, OROR_v (where $\underline{R}\underline{R}_v$ = H, alkyl or aryl), OCOROCOR_v (where $\underline{R}\underline{R}_v$ = H, alkyl or aryl), OCOOROCOOR_v (where $\underline{R}\underline{R}_v$ = alkyl or aryl), $\text{OCONR}_1\text{R}_2\text{OCONR}_u\text{R}_v$ (where $\underline{R}_1\underline{R}_u$ or $\underline{R}_2\underline{R}_v$ = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where $\underline{R}_1\underline{R}_w$, $\underline{R}_2\underline{R}_x$ or $\underline{R}_3\underline{R}_y$ = alkyl or aryl), and halogen;

R_{15} , R_{16} , R_{17} , or R_{18} in formula (III) is selected from H, alkyl, halogenated alkyl, aryl, COORCOOR_v (where $\underline{R}\underline{R}_v$ = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_u\text{R}_v$ (where $\underline{R}_1\underline{R}_u$ or $\underline{R}_2\underline{R}_v$ = H, alkyl or aryl);



R_{19} or R_{20} in formula (IV) is selected from alkyl, halogenated alkyl, aryl, $CR_1R_2OCOR_3CR_4R_5OCOR_6$ (where R_1, R_2 , R_4, R_5 or R_3, R_6 = H, alkyl or aryl), $CR_1R_2OCOOR_3CR_4R_5OCOOR_6$ (where R_1, R_2 or R_4, R_5 = H, alkyl or aryl; R_3, R_6 = alkyl or aryl), $CR_1R_2NR_3COOR_4CR_4R_5NR_6COOR_7$ (where R_1, R_2 , R_4, R_5 or R_3, R_6 = H, alkyl or aryl, R_7, R_8 = alkyl or aryl), $CR_1R_2NR_3COR_4CR_5R_6NR_7COR_8$ (where R_1, R_2, R_3, R_4, R_5 or R_7, R_8 = H, alkyl or aryl), and $CR_1R_2NR_3SO_2R_4CR_5R_6NR_7SO_2R_8$ (where R_1, R_2 or R_3, R_4 , R_5 or R_6 = H, alkyl or aryl; R_7, R_8 = alkyl or aryl); and

Handwritten:
A
X
C
W



V

Y in formula (V) is selected from H, alkyl, halogenated alkyl, aryl, NO_2 , CN , F, Cl, Br, I, $COOR_g$ (where R_g = H or alkyl), OR_y (where R_y = H, alkyl or aryl), OSO_2R_y (where R = H, alkyl or aryl), $OSOR_y$ (where R_y = H, alkyl or aryl), OSR_y (where R_y = H, alkyl or aryl), SO_2R_y (where R_y = H, alkyl or aryl), SO_3R_y (where R_y = H, alkyl or aryl), $SOONR_1R_2R_3R_y$ (where R_1, R_2 or R_3, R_y = H, alkyl or aryl), $NR_4SOOR_2NR_5SOOR_y$ (where R_4, R_y = H, alkyl or aryl; R_2, R_5 = alkyl or aryl), $NR_4SOR_2NR_5SOR_y$ (where R_4, R_y = H, alkyl or aryl; R_2, R_5 = alkyl or aryl), $CR_1R_2OR_3CR_4R_5OR_y$ (where R_1, R_2 or R_3, R_4, R_5 , R_y = H, alkyl or aryl), $CR_1(R_2O_2)_2CR_4(R_5O_2)_2$ (where R_1, R_2 = H or alkyl; R_2, R_5 = alkyl), CF_3 , CF_2CF_3 , OTf , OTs , $OCOR_y$ (where R_y = H, alkyl or aryl), and $OSiR_1R_2R_3OSiR_wR_xR_y$ (where R_1, R_2 or R_3, R_w, R_x or R_y = alkyl or aryl).

16. (Currently Amended) The method of claim 12 wherein said epoxidation reaction is carried out in a homogeneous solvent system ~~containing~~^{selected from}

dimethoxymethane-acetonitrile-water, acetonitrile-water, acetone-water, dioxane-water, dimethoxyethane-water, and tetrahydrofuran-water, or a biphasic solvent system containing selected from dichloromethane-water, chloroform-water, benzene-water, toluene-water, dimethoxymethane-water, or diethylether-water, or mixtures thereof.

17. (Original) The method of claim 12 wherein said oxidizing reagent is selected from the group consisting of potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids.

18. (Original) The method of claim 17 wherein said epoxidation reaction is carried out using potassium peroxomonosulfate as an oxidizing agent.

19. (Original) The method of claim 12 wherein said epoxidation reaction is carried out at a temperature within the range from about -10 °C to about 40 °C.

20. (Original) The method of claim 19 wherein said epoxidation reaction is carried out at room temperature.

21. (Original) The method of claim 12 wherein said epoxidation reaction is carried out at a pH within the range from about 7.0 to about 12.0.

22. (Original) The method of claim 21 wherein said pH is within the range from about 7.0 to about 7.5.

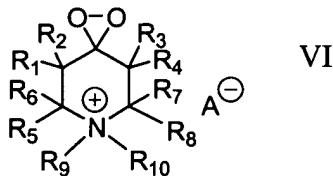
23. (Original) The method of claim 21 wherein said pH is controlled by using a pH-stat or a buffer.

24. (Currently Amended) The method of claim 23 wherein said buffer is selected from the solutions^{group} consisting of solutions of sodium bicarbonate, sodium carbonate, sodium borate, sodium hydrogenphosphate, sodium dihydrogenphosphate, sodium hydroxide, potassium hydrogenphosphate, potassium dihydrogenphosphate, potassium bicarbonate, and potassium carbonate, potassium hydroxide, and mixtures thereof.

25. (Original) The method of claim 12 wherein said epoxidation reaction provides said epoxides in at least about 5:1 β / α -epoxide ratio.

PA/MT
26. (Currently Amended) A method of producing mostly $5\beta,6\beta$ -epoxides of steroids from Δ^5 -unsaturated steroids by an epoxidation reaction using a dioxirane under conditions effective to generate epoxides,

wherein said dioxirane is selected from compounds of generic formula VI,



R_1 or R_4 in formula (VI) is selected from alkyl, halogenated alkyl, aryl, OR_vOR_v (where $\text{RR}_v = \text{H}$, alkyl or aryl), $\text{OCOR}_v\text{OCOR}_v$ (where $\text{RR}_v = \text{H}$, alkyl or aryl), $\text{OCOOR}_v\text{OCOOR}_v$ (where $\text{RR}_v = \text{alkyl or aryl}$), $\text{OCOOCH}_2\text{RR}_z$ (where $\text{RR}_z = \text{aryl}$), $\text{OCONR}_1\text{R}_2\text{OCONR}_u\text{R}_v$ (where R_1R_u or $\text{R}_2\text{R}_v = \text{H}$, alkyl or aryl), $\text{OSiR}_4\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where $\text{R}_4, \text{R}_w, \text{R}_2\text{R}_x$ or $\text{R}_3\text{R}_y = \text{alkyl or aryl}$), and halogen;

R_2 or R_3 in formula (VI) is selected from H , alkyl, halogenated alkyl, aryl, OR_vOR_v (where $\text{RR}_v = \text{H}$, alkyl or aryl), $\text{OCOR}_v\text{OCOR}_v$ (where $\text{RR}_v = \text{H}$, alkyl or aryl),

OCOOROCOOR_y (where RR_y = alkyl or aryl), $\text{OCOOCH}_2\text{RR}_z$ (where RR_z = aryl), $\text{OCOCONR}_1\text{R}_2\text{OCOCONR}_u\text{R}_v$ (where R_1R_u or R_2R_v = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where R_1R_w , R_2R_x or R_3R_y = alkyl or aryl), and halogen;

R_5 , R_6 , R_7 or R_8 in formula (VI) is selected from H, alkyl, halogenated alkyl, aryl, COORCOOR_y (where RR_y = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_u\text{R}_v$ (where R_1R_u or R_2R_v = H, alkyl or aryl);

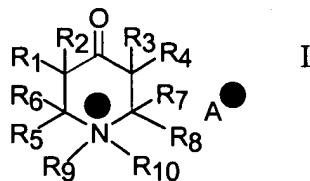


R_9 or R_{10} in formula (VI) is selected from alkyl, halogenated alkyl, and aryl; and

A in formula (VI) is selected from halogen, OTf , BF_4 , OAc , NO_3 , BPh_4 , PF_6 , and SbF_6 .

27. (Currently Amended) The method of claim 26 wherein said dioxirane is generated in situ from a ketone and an oxidizing agent selected from potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids;

wherein said ketone is selected from compounds of generic formula I,



R_1 or R_4 in formula (I) is selected from alkyl, halogenated alkyl, aryl, OR_1OR_y (where RR_y = H, alkyl or aryl), OCOOROCOR_y (where RR_y = H, alkyl or aryl), OCOOROCOOR_y (where RR_y = alkyl or aryl), $\text{OCOOCH}_2\text{RR}_z$ (where RR_z = aryl),

$\text{OCONR}_1\text{R}_2\text{OCONR}_3\text{R}_4$ (where R_1R_3 or R_2R_4 = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_4\text{R}_5\text{R}_6$ (where R_1R_4 , R_2R_5 , R_3R_6 or R_4R_6 = alkyl or aryl), and halogen;

R_2 or R_3 in formula (I) is selected from H, alkyl, halogenated alkyl, aryl, OR_1OR_2 (where R_1R_2 = H, alkyl or aryl), $\text{OCOR}_1\text{OCOR}_2$ (where R_1R_2 = H, alkyl or aryl), $\text{OCOOR}_1\text{OCOOR}_2$ (where R_1R_2 = alkyl or aryl), $\text{OCOOCH}_2\text{R}_1\text{OCOOCH}_2\text{R}_2$ (where R_1R_2 = aryl), $\text{OCONR}_1\text{R}_2\text{OCONR}_3\text{R}_4$ (where R_1R_3 or R_2R_4 = H, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_4\text{R}_5\text{R}_6$ (where R_1R_4 , R_2R_5 , R_3R_6 or R_4R_6 = alkyl or aryl), and halogen;


 R_5 , R_6 , R_7 or R_8 in formula (I) is selected from H, alkyl, halogenated alkyl, aryl, $\text{COOR}_1\text{COOR}_2$ (where R_1R_2 = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_3\text{R}_4$ (where R_1R_3 or R_2R_4 = H, alkyl or aryl);

R_9 or R_{10} in formula (I) is selected from alkyl, halogenated alkyl, and aryl; and

A in formula (I) is selected from halogen, OTf, BF_4 , OAc, NO_3 , BPh_4 , PF_6 , and SbF_6 .

28. (Original) The method of claim 26 wherein said epoxidation reaction is carried out in a solvent selected from acetonitrile, dimethoxymethane, acetone, dioxane, dimethoxyethane, tetrahydrofuran, dichloromethane, chloroform, benzene, toluene, diethylether, water, and mixtures thereof.

29. (Original) The method of claim 26 wherein said epoxidation reaction is carried out at a temperature within the range from about -40 °C to about 40 °C.

30. (Original) The method of claim 26 wherein said epoxidation reaction is carried out at a pH within the range from about 7.0 to about 12.0.

31. (Original) The method of claim 26 wherein said epoxidation reaction provides said epoxides in at least about 5:1 β/α -epoxide ratio.

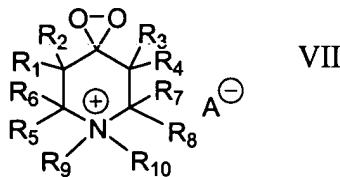
32. (Original) A method of producing mostly $5\beta,6\beta$ -epoxides of steroids from Δ^5 -unsaturated steroids having a substituent at the 3α -position by an epoxidation reaction using a dioxirane under conditions effective to generate epoxides.

33. (Currently Amended) The method of claim 32 wherein said substituent is selected from OR_y (where R_y = H, alkyl or aryl), $O(CH_2)_nOR_y$ (where n = 1, 2 or 3, R_y = H, alkyl or aryl), $O(CH_2)_mSO_nR_y$ (where n m = 1, 2 or 3; n = 0, 1 or 2; R_y = H, alkyl or aryl), $OSiR_1R_2R_3$ $OSiR_wR_xR_y$ (where R_1 , R_2 or R_3 , R_w , R_x or R_y = alkyl or aryl), OSO_nR_y (where n = 0, 1 or 2; R_y = H, alkyl or aryl), OCO_nR_y (where n = 1 or 2; R_y = H, alkyl or aryl), $OCONR_1R_2$ $OCONR_uR_y$ (where R_1 or R_2 , R_u or R_y = H, alkyl or aryl), OPO_nR_y (where ~~where~~ n = 2 or 3; R_y = alkyl or aryl), $NR_1R_2NR_uR_y$ (where R_1 or R_2 , R_u or R_y = H, alkyl or aryl), $NR_1CO_nR_2$ $NR_uCO_nR_y$ (where n = 1 or 2; R_1 or R_2 , R_u or R_y = H, alkyl or aryl), $NR_1CONR_2R_3$ $NR_1CONR_uR_y$ (where R_1 , R_2 or R_3 , R_u or R_y = H, alkyl or aryl), $NR_1SO_nR_2$ $NR_ySO_nR_y$ (where n = 1 or 2; R_1 , R_y = H, alkyl or aryl, R_2 , R_y = alkyl or aryl), $NPhth$ (Phth = phthaloyl group), $NR_1R_2R_3$ $NR_uR_yR_y$ (where R_1 , R_2 , or R_3 , R_u , R_u , or R_y = H, alkyl or aryl), $SiR_1R_2R_3$ $SiR_uR_yR_y$ (where R_1 , R_2 , or R_3 , R_u , R_u , or R_y = H, alkyl or aryl), SO_nR_y (where n = 0, 1 or 2; R_y = H, alkyl or aryl), SCO_nR_y (where n = 1 or 2; R_y = H, alkyl or aryl), halogen, CN, NO₂, alkyl, aryl, COOR_y (where R_y = H, alkyl or aryl), and $CONR_1R_2CONR_uR_y$ (where R_1 or R_2 , R_u or R_y = H, alkyl or aryl).

34. (Original) The method of claim 32 wherein said Δ^5 -unsaturated steroid having a substituent at the 3α -position is selected from the group consisting of Δ^5 -unsaturated steroids having a ketal derivative of ketone group or a thioketal derivative of ketone group at the 3-position.

35. (Currently Amended) The method of claim 32 wherein said dioxirane is selected from the group consisting of compounds of generic formula VII, VIII, IX and X,

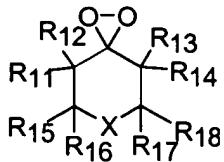
wherein

R_1 , R_2 , R_3 , or R_4 in formula (VII) is selected from H, alkyl, halogenated alkyl, aryl, OR_yOR_y (where R_yR_y = H, alkyl or aryl), $\text{OCOR}_y\text{OCOR}_y$ (where R_yR_y = H, alkyl or aryl), $\text{OCOOR}_y\text{OCOOR}_y$ (where R_yR_y = alkyl or aryl), $\text{OCOOCH}_2\text{RR}_z$ (where R_yR_z = aryl), $\text{OCCONR}_1\text{R}_2\text{OCCONR}_y\text{R}_y$ (where R_1R_y or R_2R_y = H, alkyl or aryl), $\text{OSiR}_4\text{R}_2\text{R}_3\text{OSiR}_w\text{R}_x\text{R}_y$ (where R_4R_w , R_2R_x or R_3R_y = alkyl or aryl), and halogen;

R_5 , R_6 , R_7 , R_8 , R_9 or R_{10} , in formula (VII) is selected from H, alkyl, halogenated alkyl, aryl, $\text{COOR}_y\text{COOR}_y$ (where R_yR_y = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_y\text{R}_y$ (where R_1R_y or R_2R_y = H, alkyl or aryl);

A in formula (VII) is selected from halogen, OTf, BF_4 , OAc, NO_3 , BPh_4 , PF_6 , and SbF_6 ;



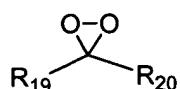
VIII

X in formula (VIII) is selected from $(CR_1R_2CR_uR_v)_n$ (where $n = 1, 2, 3, 4$, or 5 ;
 RR_u or $RR_v = H$, alkyl or aryl), O , S , SO , SO_2 , and NR_uNR_v (where $RR_v = H$, alkyl or aryl);



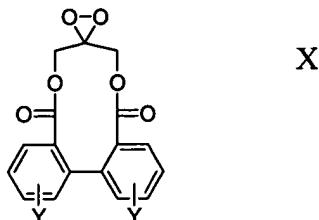
R_{11} , R_{12} , R_{13} , or R_{14} in formula (VIII) is selected from H , alkyl, halogenated alkyl, aryl, OR_uOR_v (where $RR_v = H$, alkyl or aryl), $OCOR_uOCOR_v$ (where $RR_v = H$, alkyl or aryl), $OCOOR_uOCOOR_v$ (where $RR_v = alkyl$ or aryl), $OCOOCH_2RR_u$ (where $RR_u = aryl$), $OCONR_1R_2OCONR_uR_v$ (where RR_u or $RR_v = H$, alkyl or aryl), $OSiR_1R_2R_3OSiR_uR_vR_y$ (where RR_u , RR_v , RR_x or $RR_y = alkyl$ or aryl), and halogen;

R_{15} , R_{16} , R_{17} , or R_{18} in formula (VIII) is selected from H , alkyl, halogenated alkyl, aryl, $COOR_uCOOR_v$ (where $RR_v = H$, alkyl or aryl), and $CONR_1R_2CONR_uR_v$ (where RR_u or $RR_v = H$, alkyl or aryl);



IX

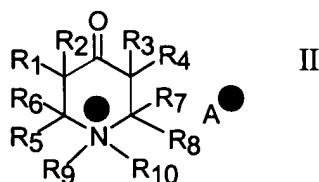
R_{19} or R_{20} in formula (IX) is selected from alkyl, halogenated alkyl, aryl, $CR_1R_2OCOR_3$, $CR_uR_vOCOR_v$ (where R_1, R_2 or R_3 , R_u , R_v = H , alkyl or aryl), $CR_1R_2OCOOR_3$, $CR_uR_vOCOOR_v$ (where R_1 or R_2 , R_u or R_v = H , alkyl or aryl; R_3 , R_y = alkyl or aryl), $CR_1R_2NR_3COOR_4$, $CR_uR_vNR_vCOOR_v$ (where R_1, R_2 or R_3 , R_u , R_v = H , alkyl or aryl, R_4 , R_y = alkyl or aryl), $CR_1R_2NR_3COR_4$, $CR_uR_vNR_uCOR_v$ (where R_1, R_2, R_3 or R_4 , R_u , R_v or R_y = H , alkyl or aryl), $CR_1R_2NR_3SO_2R_4$, $CR_uR_vNR_vSO_2R_y$ (where R_1, R_2 or R_3 , R_u , R_v or R_y = H , alkyl or aryl; R_4 , R_y = alkyl or aryl); and



Y in formula (X) is selected from H, alkyl, halogenated alkyl, aryl, NO₂, CN, F, Cl, Br, I, COOR_q (where R_q = H or alkyl), OR_v (where R_v = H, alkyl or aryl), OSO₂R_v (where R_v = H, alkyl or aryl), OSOR_v (where R_v = H, alkyl or aryl), OSR_v (where R_v = H, alkyl or aryl), SO₂R_v (where R_v = H, alkyl or aryl), SO₃R_v (where R_v = H, alkyl or aryl), SOON R₄R₂ R_uR_v (where R₄ R_u or R₂ R_v = H, alkyl or aryl), NR₄SOOR₂ NR_vSOOR_v (where R₄ R_v = H, alkyl or aryl; R₂ R_v = alkyl or aryl), NR₄SOR₂ NR_vSOR_v (where R₄ R_v = H, alkyl or aryl; R₂ R_v = alkyl or aryl), CR₄R₂OR₂ CR_uR_vOR_v (where R₄, R₂ or R₂ R_u R_v = H, alkyl or aryl), CR₄(OR₂)₂ CR_u(OR_v)₂ (where R₄ R_q = H or alkyl; R₂ R_v = alkyl), CF₃, CF₂CF₃, OTf, OTs, OCOR_v (where R_v = H, alkyl or aryl), and OSiR₄R₂R₃ OSiR_xR_yR_z (where R₄, R₂ or R₃ R_w, R_x or R_y = alkyl or aryl).

36. (Original) The method of claim 32 wherein said dioxirane is generated in situ from a ketone and an oxidizing agent selected from potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids.

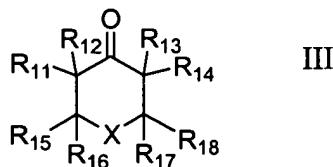
37. (Currently Amended) The method of claim 36 wherein said ketone is selected from the group consisting of compounds of generic formula II, III, IV, and V,



R_1 , R_2 , R_3 , or R_4 in formula (II) is selected from H, alkyl, halogenated alkyl, aryl, OR_1OR_2 (where $\text{RR}_y = \text{H}$, alkyl or aryl), $\text{OCOR}_1\text{OCOR}_2$ (where $\text{RR}_y = \text{H}$, alkyl or aryl), $\text{OCOOR}_1\text{OCOOR}_2$ (where $\text{RR}_y = \text{alkyl or aryl}$), $\text{OCOOCH}_2\text{RR}_z$ (where $\text{RR}_z = \text{aryl}$), $\text{OCOCONR}_1\text{R}_2\text{OCOCONR}_3\text{R}_4$ (where R_1R_2 or $\text{R}_2\text{R}_4 = \text{H}$, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_4\text{R}_5\text{R}_6$ (where R_1R_4 , R_2R_5 , R_3R_6 or $\text{R}_4\text{R}_6 = \text{alkyl or aryl}$), and halogen;

R_5 , R_6 , R_7 , R_8 , R_9 or R_{10} in formula (II) is selected from H, alkyl, halogenated alkyl, aryl, $\text{COOR}_1\text{COOR}_2$ (where $\text{RR}_y = \text{H}$, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_3\text{R}_4$ (where R_1R_3 or $\text{R}_2\text{R}_4 = \text{H}$, alkyl or aryl);

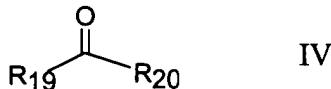
A in formula (II) is selected from halogen, OTf , BF_4 , OAc , NO_3 , BPh_4 , PF_6 , and SbF_6 ;



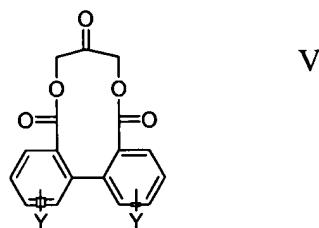
X in formula (III) is selected from $(\text{CR}_1\text{R}_2\text{CR}_3\text{R}_4)_n$ (where $n = 1, 2, 3, 4$, or 5; R_1R_2 or $\text{R}_2\text{R}_4 = \text{H}$, alkyl or aryl), O, S, SO_2 , and NR_1NR_2 (where $\text{RR}_y = \text{H}$, alkyl or aryl);

R_{11} , R_{12} , R_{13} , or R_{14} in formula (III) is selected from H, alkyl, halogenated alkyl, aryl, OR_1OR_2 (where $\text{RR}_y = \text{H}$, alkyl or aryl), $\text{OCOR}_1\text{OCOR}_2$ (where $\text{RR}_y = \text{H}$, alkyl or aryl), $\text{OCOOR}_1\text{OCOOR}_2$ (where $\text{RR}_y = \text{alkyl or aryl}$), $\text{OCOOCH}_2\text{RR}_z$ (where $\text{RR}_z = \text{aryl}$), $\text{OCOCONR}_1\text{R}_2\text{OCOCONR}_3\text{R}_4$ (where R_1R_2 or $\text{R}_2\text{R}_4 = \text{H}$, alkyl or aryl), $\text{OSiR}_1\text{R}_2\text{R}_3\text{OSiR}_4\text{R}_5\text{R}_6$ (where R_1R_4 , R_2R_5 , R_3R_6 or $\text{R}_4\text{R}_6 = \text{alkyl or aryl}$), and halogen;

R_{15} , R_{16} , R_{17} , or R_{18} in formula (III) is selected from H, alkyl, halogenated alkyl, aryl, COORCOOR_y (where $\underline{R}\underline{R}_y$ = H, alkyl or aryl), and $\text{CONR}_1R_2\text{CONR}_uR_v$ (where $\underline{R}_1\underline{R}_u$ or $\underline{R}_2\underline{R}_v$ = H, alkyl or aryl);



R_{19} or R_{20} in formula (IV) is selected from alkyl, halogenated alkyl, aryl, $CR_1R_2OCOR_3$, $CR_1R_3OCOR_4$ (where R_1 , R_2 or R_3 , R_4 , R_u or R_v = H, alkyl or aryl), $CR_1R_2OCOOR_3$, $CR_1R_3OCOOR_4$ (where R_1 , R_2 or R_3 , R_4 , R_u or R_v = H, alkyl or aryl; R_3 , R_4 = alkyl or aryl), $CR_1R_2NR_3COOR_4$, $CR_1R_3NR_4COOR_4$ (where R_1 , R_2 or R_3 , R_4 , R_u or R_v = H, alkyl or aryl, R_4 , R_5 = alkyl or aryl), $CR_1R_2NR_3COR_4$, $CR_1R_3NR_4COR_4$ (where R_1 , R_2 , R_3 or R_4 , R_s , R_t , R_u or R_v = H, alkyl or aryl), $CR_1R_2NR_3SO_2R_4$, $CR_1R_3NR_4SO_2R_4$ (where R_1 , R_2 or R_3 , R_4 , R_u or R_v = H, alkyl or aryl; R_4 , R_5 = alkyl or aryl); and



Y in formula (V) is selected from H, alkyl, halogenated alkyl, aryl, NO₂, CN, F, Cl, Br, I, COORCOOR_g (where RR_g = H or alkyl), OROR_y (where RR_y = H, alkyl or aryl), OSO₂RR_y (where RR_y = H, alkyl or aryl), OSOROSOR_y (where RR_y = H, alkyl or aryl), OSSROSR_y (where RR_y = H, alkyl or aryl), SO₂RR_y (where RR_y = H, alkyl or aryl), SO₃RR_y (where RR_y = H, alkyl or aryl), SOON R₁R₂R₃R_y (where R₁ or R₂ R₃ or R_y = H, alkyl or aryl), NR₁SOOR₂ NR_ySOOR_y (where R₁ R_y = H, alkyl or aryl; R₂ R_y = alkyl or aryl), NR₁SOR₂ NR_ySOR_y (where R₁ R_y = H, alkyl or aryl; R₂ R_y = alkyl or aryl),

CR₁R₂OR₃, CR₁R₃OR₄ (where R₁, R₂ or R₃, R₄ or R₅ = H, alkyl or aryl), CR₁(OR₂)₂, CR₁(OR₃)₂ (where R₁, R₂ = H or alkyl; R₂, R₃ = alkyl), CF₃, CF₂CF₃, OTf, OTs, OCOR₅ (where R₅ = H, alkyl or aryl), and OSiR₁R₂R₃, OSiR₄R₅R₆ (where R₁, R₂ or R₃, R₄, R₅ or R₆ = alkyl or aryl).

38. (Original) The method of claim 32 wherein said epoxidation reaction is carried out in a solvent selected from acetonitrile, dimethoxymethane, acetone, dioxane, dimethoxyethane, tetrahydrofuran, dichloromethane, chloroform, benzene, toluene, diethylether, water and mixtures thereof.

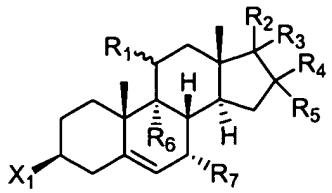
39. (Original) The method of claim 32 wherein said epoxidation reaction is carried out at a temperature within the range from about -40 °C to about 40 °C.

40. (Original) The method of claim 32 wherein said epoxidation reaction is carried out at a pH within the range from about 7.0 to about 12.0.

41. (Original) The method of claim 32 wherein said epoxidation reaction provides said epoxides in at least about 5:1 β/α -epoxide ratio.

42. (Currently Amended) A method comprising:

producing mostly 5 β ,6 β -epoxides of steroids by epoxidation reactions of Δ^5 -unsaturated steroids of generic formula XI catalyzed by ketones of generic formula XII, wherein



XI

X_1 in formula (XI) is selected from H, ΘROR_q (where RR_q = H or alkyl), OCH_2OCH_3 , $\Theta COROCOR_y$ (where RR_y = alkyl or aryl), $\Theta SiR_4OSiR_w'R_2R_x'R_3R_y'$ (where R_4R_w' , R_2R_x' or R_3R_y' = alkyl or aryl), halogen, CN, alkyl, aryl, and $\Theta OORCOOR_y$ (where RR_y = H, alkyl or aryl);

R_1 in formula (XI) is selected from H, ΘROR_q (where RR_q = H or alkyl), $\Theta COROCOR_y$ (where RR_y = alkyl or aryl), OCH_2OCH_3 , halogen, CF_3 , and CF_2CF_3 ;

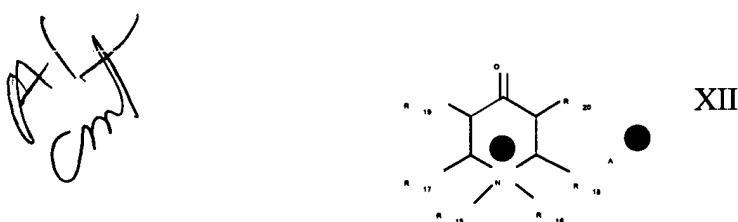
R_2 and R_3 in formula (XI) are each selected from the group consisting of H, alkyl, aryl, halogen, ΘROR_q (where RR_q = H or alkyl), $\Theta COROCOR_y$ (where RR_y = alkyl or aryl), $\Theta SiR_4OSiR_w'R_2R_x'R_3R_y'$ (where R_4R_w' , R_2R_x' or R_3R_y' = alkyl or aryl), $\Theta CORCOR_p$ (where RR_p = alkyl), $COCH_2\Theta ROR_q$ (where RR_q = H or alkyl), $COCH_2\Theta COROCOR_y$ (where RR_y = alkyl or aryl), $COCH_2F$, $\Theta OORCOOR_q$ (where RR_q = H or alkyl), $C(OCH_2CH_2O)RR_p$ (where RR_p = alkyl), $C(OCH_2CH_2O)CH_2\Theta ROR_q$ (where RR_q = H or alkyl), $C(OCH_2CH_2O)CH_2\Theta COROCOR_y$ (where RR_y = alkyl or aryl), and $C(OCH_2CH_2O)CH_2F$; or, are selected from the group consisting of O, OCH_2CH_2O , and $OCH_2CH_2CH_2O$;

R_4 in formula (XI) is selected from H, C_1-C_4 alkyl, halogen, ΘROR_q (where RR_q = H or alkyl), $\Theta COROCOR_y$ (where RR_y = alkyl or aryl), and $\Theta SiR_4OSiR_w'R_2R_x'R_3R_y'$ (where R_4R_w' , R_2R_x' or R_3R_y' = alkyl or aryl);

R_5 in formula (XI) is selected from H, C₁–C₄ alkyl, halogen, $\Theta R_4 R_q$ (where $R R_q$ = H or alkyl), $\Theta C O R_4 O C O R_y$ (where $R R_y$ = alkyl or aryl), and $\Theta S i R_4 O S i R_w R_2 R_x' R_3 R_y'$ (where $R_4 R_w'$, $R_2 R_x'$ or $R_3 R_y'$ = alkyl or aryl);

R_6 in formula (XI) is selected from H, halogen, $\Theta R_4 R_q$ (where R_q = H or alkyl), and $\Theta C O R_4 O C O R_y$ (where $R R_y$ = alkyl or aryl);

R_7 in formula (XI) is selected from H, halogen, $\Theta R_4 R_q$ (where $R R_q$ = H or alkyl), and $\Theta C O R_4 O C O R_y$ (where $R R_y$ = alkyl or aryl);



XII

R_{15} and R_{16} in formula (XII) are each selected from alkyl and aryl;

R_{17} and R_{18} in formula (XII) are each selected from H, alkyl, aryl, $\Theta O R C O O R_y$ (where $R R_y$ = H, alkyl or aryl), and $\Theta C O N R_1 R_2 C O N R_u R_y$ (where $R_1 R_u$ or $R_2 R_y$ = H, alkyl or aryl);

R_{19} and R_{20} in formula (XII) are each selected from C₁–C₄ alkyl, halogenated alkyl, and halogen; and

A in formula (XII) is selected from OTf, BF₄, OAc, NO₃, BPh₄, PF₆, and SbF₆.

43. (Currently Amended) The method of claim 42 wherein said C₁–C₄ alkyl is selected from the group consisting of methyl, ethyl, normal-propyl, iso-propyl, normal-

butyl, iso-butyl, sec-butyl, and tert-butyl; and said aryl is selected from the group consisting of phenyl, substituted phenyl, naphthyl, and substituted naphthyl groups.

44. (Original) The method of claim 42 wherein said epoxidation reactions are carried out in a homogeneous solvent system selected from the group consisting of dimethoxymethane-acetonitrile-water, acetonitrile-water, acetone-water, dioxane-water, dimethoxyethane-water, tetrahydrofuran-water, and mixtures thereof.

45. (Currently Amended) The method of claim 42 wherein said epoxidation reactions are carried out in a biphasic solvent system selected from the group consisting of dichloromethane-water, chloroform-water, benzene-water, toluene-water, dimethoxymethane-water, ~~or~~and diethylether-water, and mixtures thereof.

46. (Original) The method of claim 42 wherein said oxidizing reagent is selected from the group consisting of potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids.

47. (Original) The method of claim 42 wherein said epoxidation reactions are carried out at a temperature within the range from about -10 °C to about 40 °C.

48. (Original) The method of claim 47 wherein said epoxidation reactions are carried out at room temperature.

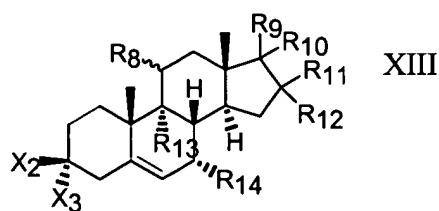
49. (Original) The method of claim 42 wherein said epoxidation reactions are carried out at a pH within the range from about 7.0 to about 12.0.

50. (Original) The method of claim 49 wherein said pH is within the range from 7.0 to 7.5.

51. (Original) The method of claim 49 wherein said pH is controlled by using a pH-stat or a buffer.

52. (Currently Amended) The method of claim 51 wherein said buffer is selected from the group consisting of sodium bicarbonate, sodium carbonate, sodium borate, sodium hydrogenphosphate, sodium dihydrogenphosphate, sodium hydroxide, potassium hydrogenphosphate, potassium dihydrogenphosphate, potassium bicarbonate, potassium carbonate, potassium hydroxide, ~~or~~and mixtures thereof.

53. (Currently Amended) A method comprising:
producing mostly $5\beta,6\beta$ -epoxides of steroids by epoxidation reactions of Δ^5 -unsaturated steroids of generic formula XIII catalyzed by ketones of generic formula XIV, XV, XVI, and XVII, wherein



X_2 in formula (XIII) is selected from the group consisting of H, ~~O~~ROR_q (where RR_q = H or alkyl), OCH₂OCH₃, ~~O~~COROCOR_y (where RR_y = alkyl or aryl), ~~O~~SiR₄OSiR_w'R₂R_x'R₃R_y' (where R₁R_w', R₂R_x' or R₃R_y' = alkyl or aryl), halogen, CN, alkyl, aryl, and ~~C~~OORCOOR_y (where RR_y = H, alkyl or aryl), and,

X_3 in formula (XIII) is selected from the group consisting of OR_qOR_q (where RR_q = H or alkyl), OCH_2OCH_3 , $\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), $\text{OSiR}_4\text{OSiR}_w\text{R}_2\text{R}_x'\text{R}_3\text{R}_y'$ (where $\text{R}_4\text{R}_w'$, $\text{R}_2\text{R}_x'$ or $\text{R}_3\text{R}_y'$ = alkyl or aryl), halogen, CN, NO_2 , alkyl, and aryl; or,

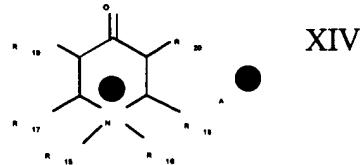
X_2 and X_3 in formula (XIII) are selected from the group consisting of O, $\text{OCH}_2\text{CH}_2\text{O}$, and $\text{OCH}_2\text{CH}_2\text{CH}_2\text{O}$;

R_8 in formula (XIII) is selected from H, OR_qOR_q (where RR_q = H or alkyl), $\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), OCH_2OCH_3 , halogen, CF_3 , and CF_2CF_3 ;

R_9 and R_{10} in formula (XIII) are each selected from the group consisting of H, alkyl, aryl, halogen, OR_qOR_q (where RR_q = H or alkyl), $\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), $\text{OSiR}_4\text{OSiR}_w\text{R}_2\text{R}_x'\text{R}_3\text{R}_y'$ (where $\text{R}_4\text{R}_w'$, $\text{R}_2\text{R}_x'$ or $\text{R}_3\text{R}_y'$ = alkyl or aryl), COR_pCOR_p (where RR_p = alkyl), $\text{COCH}_2\text{OR}_q\text{OR}_q$ (where RR_q = H or alkyl), $\text{COCH}_2\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), COCH_2F , $\text{COOR}_q\text{COOR}_q$ (where RR_q = H or alkyl), $\text{C}(\text{OCH}_2\text{CH}_2\text{O})\text{RR}_p$ (where RR_p = alkyl), $\text{C}(\text{OCH}_2\text{CH}_2\text{O})\text{CH}_2\text{OR}_q\text{OR}_q$ (where RR_q = H or alkyl), $\text{C}(\text{OCH}_2\text{CH}_2\text{O})\text{CH}_2\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), and $\text{C}(\text{OCH}_2\text{CH}_2\text{O})\text{CH}_2\text{F}$; or R_9 and R_{10} in formula (XIII) are selected from the group consisting of O, $\text{OCH}_2\text{CH}_2\text{O}$, and $\text{OCH}_2\text{CH}_2\text{CH}_2\text{O}$;

R_{11} and R_{12} in formula (XIII) are each selected from the group consisting of H, $\text{C}_1\text{--C}_4$ alkyl, halogen, OR_qOR_q (where RR_q = H or alkyl), $\text{OCOR}_q\text{OCOR}_y$ (where RR_y = alkyl or aryl), and $\text{OSiR}_4\text{OSiR}_w\text{R}_2\text{R}_x'\text{R}_3\text{R}_y'$ (where $\text{R}_4\text{R}_w'$, $\text{R}_2\text{R}_x'$ or $\text{R}_3\text{R}_y'$ = alkyl or aryl);

R_{13} and R_{14} in formula (XIII) are each selected from the group consisting of H, halogen, OR_1OR_2 (where R_1R_2 = H or alkyl), and $\text{OCOR}_1\text{OCOR}_2$ (where R_1R_2 = alkyl or aryl);



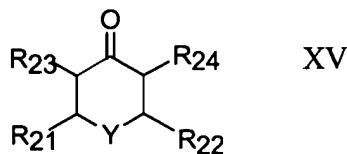
XIV

R_{15} or R_{16} in formula (XIV) is selected from alkyl and aryl;

R_{17} or R_{18} in formula (XIV) is selected from H, alkyl, aryl, $\text{COOR}_1\text{COOR}_2$ (where R_1R_2 = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_3\text{R}_4$ (where R_1R_3 or R_2R_4 = H, alkyl or aryl);

R_{19} or R_{20} in formula (XIV) is selected from H, $\text{C}_1\text{--C}_4$ alkyl, halogenated alkyl, and halogen; and

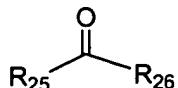
A in formula (XIV) is selected from OTf , BF_4 , OAc , NO_3 , BPh_4 , PF_6 , and SbF_6 ;



Y in formula (XV) is selected from CH_2 , O, S, SO_2 , and NR_1NR_2 (where R_1R_2 = H or alkyl);

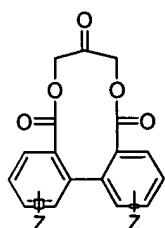
R_{21} or R_{22} in formula (XV) is selected from H, alkyl, aryl, $\text{COOR}_1\text{COOR}_2$ (where R_1R_2 = H, alkyl or aryl), and $\text{CONR}_1\text{R}_2\text{CONR}_3\text{R}_4$ (where R_1R_3 or R_2R_4 = H, alkyl or aryl);

R_{23} or R_{24} in formula (XV) is selected from H, halogen, $\text{C}_1\text{--C}_4$ alkyl, halogenated alkyl, and $\text{OCOR}_1\text{OCOR}_2$ (where R_1R_2 = alkyl or aryl);



XVI

R_{25} or R_{26} in formula (XVI) is selected from $\text{C}_1\text{--C}_4$ alkyl, halogenated alkyl, $\text{CH}_2\text{OCOROCOR}_y$ (where RR_y = alkyl or aryl); and



XVII

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Z in formula (XVII) is selected from H, $\text{C}_1\text{--C}_4$ alkyl, aryl, NO_2 , CN , F, Cl, Br, I, COORCOOR_p (where RR_p = alkyl), CH_2OROR_q (where RR_q = H or alkyl), $\text{CH}(\text{OROR}_p)_2$ (where RR_p = alkyl), CF_3 , CF_2CF_3 , OTf, OTs, OCOROCOR_y (where RR_y = alkyl or aryl), and $\text{OSiR}_4\text{OSiR}_w\text{R}_2\text{R}_x\text{R}_3\text{R}_y'$ (where $\text{R}_4\text{R}_w'$, $\text{R}_2\text{R}_x'$ or $\text{R}_3\text{R}_y'$ = alkyl or aryl).

54. (Currently Amended) The method of claim 53 wherein said $\text{C}_1\text{--C}_4$ alkyl is selected from the group consisting of methyl, ethyl, normal-propyl, iso-propyl, normal-butyl, iso-butyl, sec-butyl, and tert-butyl; and said aryl is selected from the group consisting of phenyl, substituted phenyl, naphthyl, and substituted naphthyl groups.

55. (Original) The method of claim 53 wherein said epoxidation reactions are carried out in a homogeneous solvent system selected from the group consisting of dimethoxymethane-acetonitrile-water, acetonitrile-water, acetone-water, dioxane-water, dimethoxyethane-water, and tetrahydrofuran-water, and mixtures thereof.

56. (Currently Amended) The method of claim 53 wherein said epoxidation reactions are carried out in a biphasic solvent system selected from the group consisting

of dichloromethane-water, chloroform-water, benzene-water, toluene-water, dimethoxymethane-water, ~~or and~~ diethylether-water, and mixtures thereof.

57. (Original) The method of claim 53 wherein said oxidizing reagent is selected from the group consisting of potassium peroxomonosulfate, sodium hypochlorite, sodium perborate, hydrogen peroxide, and peracids.

58. (Original) The method of claim 53 wherein said epoxidation reactions are carried out at a temperature within the range from about -10 °C to about 40 °C.

59. (Original) The method of claim 58 wherein said epoxidation reactions are carried out at room temperature.

60. (Original) The method of claim 53 wherein said epoxidation reactions are carried out at a pH within the range from about 7.0 to about 12.0.

61. (Original) The method of claim 60 wherein said pH is within the range from 7.0 to 7.5.

62. (Original) The method of claim 60 wherein said pH is controlled by using a pH-stat or a buffer.

63. (Currently Amended) The method of claim 62 wherein said buffer is selected from the group consisting of sodium bicarbonate, sodium carbonate, sodium borate, sodium hydrogenphosphate, sodium dihydrogenphosphate, sodium hydroxide, potassium hydrogenphosphate, potassium dihydrogenphosphate, potassium bicarbonate, potassium carbonate, potassium hydroxide, ~~or and~~ mixtures thereof.